



statistical instruments for industry



## TENTATIVE DATA

### MODEL 331A

### 10 TO 20,000 CPS NOISE GENERATOR

In many areas of science, engineering, medical research, and manufacturing there occur situations requiring a dependable source of audio frequency noise with very stable statistical characteristics. The Model 331A Noise Generator was specifically designed to provide such a source.

The Model 331A Noise Generator employs two grid-controlled gas thyratrons in transverse magnetic fields as primary noise sources. The noise from the two noise sources is combined in a unique circuit to provide noise with greatly improved characteristics. This noise is fed into a shaping amplifier which equalizes the noise tube characteristics. The noise is then passed through a precision regulator circuit which continuously stabilizes its output against a zener reference voltage. The resulting noise voltage is passed through a continuously variable attenuator and feedback amplifier whose output has a constant "white" noise spectrum from 10 to 20,000 cps.

## SPECIFICATIONS

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### OUTPUT SPECTRUM

Uniform to plus or minus 0.5 db from 10 to 20,000 cps. Also available with a 10 to 2,000 cps, 10 to 5,000 cps, 10 to 50,000 cps, 10 to 200,000 cps, or 10 to 500,000 cps output.

### OUTPUT LEVEL

0 to 5 volts RMS, adjustable by self contained attenuator. A dynamic range of 7 to 1 peak to RMS value is provided.

### SPECTRAL DENSITY

Approximately  $1 \times 10^{-3}$  (volts)<sup>2</sup> per cps for 5 volt rms output.

### AMPLITUDE PROBABILITY DISTRIBUTION

Gaussian (Normal) to plus or minus one percent with zero mean.

### NOISE REGULATOR

RMS output level continuously stabilized against a zener reference voltage. Output regulation  $\pm 0.1\%$  for input range of 2 to 1. Regulation range is greater than 4 to 1.

### OVERLOAD INDICATOR

Panel overload indicator lights when input noise level to regulator is out of regulation range.

### OUTPUT METER

Meter reads 0 to 5 volts RMS

### MAXIMUM OUTPUT LOAD

10,000 ohms.

### OUTPUT IMPEDANCE

Less than 10 ohms.

### OUTPUT CONNECTOR

BNC

### POWER SUPPLY

Built-in highly regulated plate and filament supplies.

### POWER REQUIREMENTS

115/230 volts plus or minus 10/20 volts. 50 to 1,000 cycles AC at 80 watts.

### COLOR

Rack panel is flat grey.

### MOUNTING

Mounted on standard relay rack panel 7" high x 19" wide and is 15" deep. Can be supplied in deluxe metal cabinet.

### SHIPPING WEIGHT

Approximately 50 lbs.



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## LOW FREQUENCY TUBE TYPE ELGENCO NOISE GENERATORS



301A

\$1995

**AMPLITUDE PROBABILITY DISTRIBUTION:** Gaussian  $\pm 1\%$ .  
**OUTPUT SPECTRUM:** Uniform  $\pm 0.1$  db from 0 to 35 cps.  
**MAX. OUTPUT:** 12 volts rms into a 1 megohm input resistance.  
 Dynamic range of 5 to 1 peak-to-rms is provided.  
**MAX. SPECTRAL DENSITY:** Approx. 2.5 volts<sup>2</sup>/cps.  
**D.C. UNBALANCE:** Less than 50 mv.  
**POWER:** 115 v  $\pm 10$  v, 60 cps ac.  
**MOUNTING:** Standard relay rack panel 7" high x 19" wide.  
**COLOR:** Rack panel in flat grey.  
**SHIPPING WEIGHT:** Approx. 40 lbs.

321A

\$2095

**AMPLITUDE PROBABILITY DISTRIBUTION:** Gaussian  $\pm 1\%$ .  
**OUTPUT SPECTRUM:** Uniform  $\pm 0.1$  db from 0 to 105 cps.  
**MAX. OUTPUT:** 12 volts rms into a 1 megohm input resistance.  
 Dynamic range of 5 to 1 peak-to-rms is provided.  
**MAX. SPECTRAL DENSITY:** Approx. 1.0 volts<sup>2</sup>/cps.  
**D.C. UNBALANCE:** Less than 50 mv.  
**POWER:** 115 v  $\pm 10$  v, 60 cycles ac.  
**MOUNTING:** Standard relay rack panel 7" high x 19" wide.  
**COLOR:** Rack panel in flat grey.  
**SHIPPING WEIGHT:** 40 lbs.

## GENERAL PURPOSE TUBE TYPE ELGENCO NOISE GENERATORS



331A

\$1295

**OUTPUT SPECTRUM:** Uniform to plus or minus 0.5 db from 10 to 20,000 cps.  
**OUTPUT LEVEL:** 0 to 5 volts rms, adjustable by self-contained attenuator. A dynamic range of 7 to 1 peak to rms value is provided.  
**SPECTRAL DENSITY:** Approx. 1 mv/√cps for 5 volt rms output.  
**AMPLITUDE PROBABILITY DISTRIBUTION:** Gaussian  $\pm 1\%$ .  
**NOISE REGULATOR:** rms output level continuously stabilized against a zener reference voltage. Output regulation  $\pm 0.1\%$  for input range of 2 to 1. Regulation range is greater than 4 to 1.  
**OVERLOAD INDICATOR:** Panel overload indicator lights when input noise level to regulator is out of regulation range.  
**OUTPUT METER:** 0 to 5 volts rms.  
**MAX. LOAD:** 10,000 ohms.  
**OUTPUT IMPEDANCE:** Less than 10 ohms.  
**POWER REQUIREMENTS:** 115/230 volts  $\pm 10/20$  volts, 50 to 1,000 cycles AC.  
**COLOR:** Rack panel is flat grey.  
**MOUNTING:** Standard relay rack panel 7" high x 19" wide and is 15" deep. Can be supplied in deluxe metal cabinet.  
**SHIPPING WEIGHT:** Approx. 50 lbs.

331A-23	10 cps to 2 kc	\$1395
331A-53	10 cps to 5 kc	\$1395
331A-54	10 cps to 50 kc	\$1395
331A-25	10 cps to 200 kc	\$1495
331A-55	10 cps to 500 kc	\$1645

## DUAL OUTPUT TUBE TYPE ELGENCO NOISE GENERATORS



311A

312A

Amp. Probability Dist.  
 Output Spectrum  
 Max. Output  
 Max. Spectral Density  
 DC Unbalance  
 Output Load  
 Power  
 Mounting  
 Color  
 Shipping Weight

Gaussian  $\pm 1\%$   
 Uniform  $\pm .1$  db 0 to 35 cps  
 12 volts rms  
 2.5 (volts)<sup>2</sup>/cps approx.  
 Less than 50 mv  
 1 megohm minimum  
 115v  $\pm 10$ v, 50/60 cps at 90 watts  
 Standard relay rack 7" high x  
 19" long or deluxe cabinet  
 Rack panel is flat grey  
 Approximately 45 lbs.

\$2395

Gaussian  $\pm 2\%$   
 Uniform  $\pm .5$  db, 10 cps to 20 kc  
 15 volts rms  
 7.5 (mv)<sup>2</sup>/cps approx.  
 100k ohms minimum

Gaussian  $\pm 1\%$   
 Uniform  $\pm 0.1$  db 0 to 105 cps  
 12 volts rms  
 1.0 (volts)<sup>2</sup>/cps approx.  
 Less than 50 mv  
 1 megohm minimum

\$2495

**Phone, wire, write your local Elgenco Rep for fast service**